

**REMARKS**

Claims 8-16, 21 and 23 are all the claims pending in the application. Claims 8-12, 15 and 16 are rejected. Claims 13, 14, 21 and 23 are withdrawn from consideration. Claim 11 is objected to. Claims 15, 16, 21 and 23 are amended. New claims 24-26 are added.

Support for the amendment to claims 15 and 16 and for new claims 24 and 25 appears at page 5, third full paragraph (paragraph [0026] of US 2005/0207829) that recites:

*Interior element 17 on each of two diametrically opposite peripheral areas of outer cone 22 has a plurality of fins 41, whose longitudinal end face runs parallel to the stick axis. Each fin 41 is axially guided in a correspondingly wide slot 43, 44, and 143, 144 of spreading element 16, 116. In this manner, when interior element 17 moves axially relative to spreading element 16, 116, it cannot rotate with respect to the latter. Both slots 43, 44, and 143, 144 are provided essentially over the longitudinal extension of main body 23 of spreading element 16, 116, i.e., they only penetrate into the area of cylindrical shoulder 38, 138 to an insignificant extent. In other words, this also means that the greatest radial dimension of diametrically opposite fins 41, is equal to the interior diameter of cylindrical shoulder 38, 138.*

Support for new claim 26 appears throughout the original specification and, in particular, at paragraphs [0026]-[0030] of US 2005/0207829.

***Accompanying Second Declaration of Lenhart and Model***

Applicant is submitting with this Amendment a Second Declaration of Klaus Lenhart, including a model of the invention, as disclosed and claimed in the original specification (Exhibit A) and a copy of the published application 2005/0207829 (Exhibit B). The model comprises an upper portion outer tube with a handle, a mid portion inner tube (stamped "Sample 2") and an clamping mechanism of a three part ski pole sold by

the assignee of the present application (the lower portion inner tube is omitted). The clamping mechanism has a threaded exterior stop (26) that can be removed from the adjusting screw (18) by rotating clockwise (ordinarily the stop is glued), and clearly demonstrates the various features of the invention that are novel and unobvious with respect to the assembly of diverse and differently structured devices that are known in the prior art. Accompanying this Amendment is a Petition under 37 C.F.R. § 1.91 that provides for the submission of a model or exhibit as part of the application file history. This model should be retained in the file for use as an exhibit for a Brief on Appeal and an oral hearing in any appeal, if necessary.

***Response to Amendment***

Applicant notes with appreciation the Examiner's amendment to the instructions to amend the specification, which takes into consideration the substitute specification filed on November 16, 2007, which does not have paragraph numbering.

***Withdrawal of Allowability***

In his comments under the heading "***Interview***" at page 3 of the Office Action dated December 23, 2008, the Examiner confirms that the language "and contactable with each limit stop" presented at the interview, (1) is ***not*** taught by Lenhart and (2) was a basis for the Examiner to find the claims allowable. As subsequently discussed, these conclusions continue to support patentability, as the Examiner's basis for withdrawal of allowability is manifestly erroneous.

**Stated Basis for Withdrawal**

The Examiner now withdraws his conclusion that the claims are allowable because the limitation "does not appear to be supported by the original disclosure as the fins in the instant

application do not engage the cylindrical shoulder 38 so that the spreadable element moves with or becomes dragged with the fins thus allowing the spreadable element to make contact with the lower limit stop as compared to the model presented.”

The Examiner explains in the Office Action that he

“realized, after the interview, that the fins on the model where much longer in the radial direction than shown and abutted the cylindrical shoulder 38 thus allowing the spreadable element to move with the fins and being dragged so that the spreadable element contacts the lower limit stop. The fins on the model that permit the spreadable element to move to the lower limit stop are not in the original disclosure. The fins in the model are much longer than the inner diameter of the cylindrical shoulder 38 as compared to the original drawings filed. This feature is the difference between the model and that disclosed. Since the fins do not engage with the cylindrical shoulder in the instant application, the spreadable element does not move or contact with the lower limit. To allow the spreadable element to contact with the lower limit would require the fins engaging at the top edge of the cylindrical shoulder 38 as presented in the model.”

**Language of Claim 8 Concerning Limit Stop Does NOT Involve Fins**

As is clear from the foregoing quote, the Examiner’s stated basis for reversing his conclusions is focused on the fins and their engagement with the spreadable element, particularly a shoulder of the spreadable element. However, this reasoning is not relevant to the numerous bases that exist for patentability of claim 8, including but not limited to the added language “and contactable with each limit stop.”

First, claim 8 does not even refer to fins. Thus, the Examiner’s rationale does not apply to this claim.

Second, the focus of the invention as defined in claim 8 is on the combination and interaction of several structural elements to form an adjustable-length pole, including two limit stops, an adjusting screw, an interior element having an internal threaded bore and an outer tapered cone, and a radially spreadable element that is disposed between the two limit stops, is contactable with each limit stop and is sized to be smaller than the distance between the limit stops by a gap distance. The unique combination and arrangement of the components, and their interaction, provide an effective clamping mechanism for mating lengths of an adjustable pole that clearly defines over the prior art.

**The Examiner's Statement of Structure and Operation of the Invention is *NOT* Correct**

The Examiner finding that “fins in the instant application do not engage the cylindrical shoulder 38 so that the spreadable element moves with or becomes dragged with the fins thus allowing the spreadable element to make contact with the lower limit stop as compared to the model presented” does not reflect the operation of the invention.

First, the fins are not intended to engage the cylindrical shoulder as part of their operation. As is clear from the model appended to the Second Declaration of Klaus Lenhart, the fins 41, 42 do not contact the shoulder, nor need they make such contact. In the embodiment illustrated in Fig. 5, the slot 148 will pass through the entire shoulder 138, forming an “axially continuous slot,” as taught in the first full paragraph on page 6 of the substitute specification (paragraph [0029] of the published application).

Second the spreading element 16 is not moved with or dragged by the fins 41, 42. The only purpose for the fins is to prevent rotation of the spreading element 16 when the interior

element 17 moves axially, as taught at page 5, third full paragraph of the substitute specification (see paragraph [0026] of the published application).

Third, the spreading element moves between the limit stops and is contactable with each limit stop without action by the fins. The spreading element is sized so that the distance between both limit stop surfaces 24 and 28 is somewhat greater than the axial length of spreading element 16, namely, the gap distance, as explained in the substitute specification in the paragraph bridging pages 4 and 5 (paragraph [0023] of the published specification). The spreading element is moveable by the gap distance, and in a clamping operation, the gap distance provides added clamping force, as explained in the substitute specification at page 6, second full paragraph (paragraph [0030] of the published specification).

**The Model Accompanying the Second Declaration of Klaus Lenhart Demonstrates the Structure and Operation of the Invention**

The Second Declaration of Klaus Lenhart, which accompanies this Amendment, includes a model of the invention, as implemented according to the design of Figs. 1-3 and the supporting teachings in the specification. The model clearly demonstrates:

- that the radially spreadable element is "contactable with each limit stop;"
- that the radially spreadable element moves between each limit stop without moving with or becoming dragged by the fins;
- that the axial slots have an axial length which is larger than the axial length of the fins;
- that the fins are sized to move within the slots as the adjusting screw is rotated with respect to the interior element and, thereby prevent rotation of the radially

spreadable element, and do not need to be longer in the radial direction than shown in the figures; and

- that the fins need not engage the shoulder of the spreadable element.

**Based on the Examiner's Admissions, the Claims are Allowable**

Given the Examiner's admission (1) that Lenhart does not disclose at least that the spreadable element is "contactable with each limit stop," and (2) that the absence of this limitation in Lenhart was a basis for the indication of allowability, the claims 8 and 15 that contain the limitation should be allowed.

***Election of Species***

The Examiner withdraws claims 13, 14, 21, and 23 from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected species, there being no allowable generic or linking claim.

In support of this withdrawal as to claims 21 and 23, the Examiner states that "these claims are not readable on the elected species I, Figures 1 and 2, as the axial slots 43, 44 do not extend an entire axial length of the radially spreadable element 16. The slots 43, 44 rather stop short of the entire length at the cylindrical shoulder 38. These claims also do not read on the non-elected species as the non-elected species only has one axial slot that extends an entire axial length of the radially spreadable element and an axial slot that extends up to the slotted cylindrical shoulder 138."

**The Examiner's Withdrawal is NOT Supported by the Original Disclosure**

Support for claims 21 and 23 appear at page 5, third full paragraph (paragraph [0026] of US 2005/0207829) that recites with regard to the embodiment illustrated in Figs. 1 and 2:

*Interior element 17 on each of two diametrically opposite peripheral areas of outer cone 22 has a plurality of fins 41, whose longitudinal end face runs parallel to the stick axis. Each fin 41 is axially guided in a correspondingly wide slot 43, 44, and 143, 144 of spreading element 16, 116. In this manner, when interior element 17 moves axially relative to spreading element 16, 116, it cannot rotate with respect to the latter. Both slots 43, 44, and 143, 144 are provided essentially over the longitudinal extension of main body 23 of spreading element 16, 116, i.e., they only penetrate into the area of cylindrical shoulder 38, 138 to an insignificant extent. In other words, this also means that the greatest radial dimension of diametrically opposite fins 41, is equal to the interior diameter of cylindrical shoulder 38, 138.*

The underscored language of claims 21 and 23 state that the axial slots “*extend virtually over* an entire length of said radially spreadable element.”

Applicant respectfully submits that “extend virtually over” and “provided essentially over” are substantially the same in meaning. Both clearly mean that the slot does not extend completely over the entire length (of the radially spreadable element), as would be understood by one skilled in the art. First, the word “virtually” as used as an adjective in the claims means “nearly, almost entirely” and does not mean “completely” or the like (see Merriam Webster’s Collegiate Dictionary, Tenth Edition (1999), copy enclosed). Second, when defining the structure of the notches 46 that are all axially extended in the longitudinal direction, parallel to and substantially coextensive with the slots 43, 44, the notches are defined at page 5, paragraph 4 (paragraph [0027] of the published specification) as extending “over virtually the entire length” of the spreading body. In all cases, the word “virtually” means nearly, as applied to the embodiment of Figs. 1 and 2, and not entirely, as applied to the embodiment of Figs. 4 and 5.

Indeed, the disclosure of the embodiment in Figs. 4 and 5 teach an alternative embodiment where the slot is an “axially continuous slot 148” that is “partially identical with slots 143, 144” but is “narrower in the area that extends further.”

The Examiner, in holding the claims non-elected, improperly demands tracking of the express language of the specification.

Nonetheless, in order to minimize the issues for petition or appeal, Applicant is amending claims 21 and 23 to expressly state that the slots extend over most but not all of an entire axial length of the radially spreadable element, i.e., they do not extend the entire length of the radially spreadable element. In addition, new claims 24 and 25 expressly state that the slots do not extend through the shoulder.

On the basis of the foregoing argument and amendment, claims 21 and 23-25 should be examined and found allowable.

***Claim Rejections - 35 USC § 112 ¶1***

**Claims 8-11, 15, and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.** This rejection is traversed for at least the following reasons.

**Claims 8 and 10**

In framing the rejection, the Examiner states that “the recitation ‘and is contactable with each limit stop’ in claims 8 and 10, lines 15-16, is not supported by the written description requirement and neither is this limitation shown in elected Figures 1 and 2.” In explaining the basis for this conclusion, the Examiner states at pages 5 and 6 of the Office Action that:

The affidavit indicates that Figure 1 shows contact with contact of shoulder 38 of element 16 at page 3 but this is not accurate as Figure 1 only



shows contact with stop 26 as described on page 6, lines 20-25. This passage which is paragraph [030] in the PGpub does not mention any reference to shoulder 38. Applicant further remarks on page 3 that the shoulder of element 16 with stop 28 occurs due to axial force as explained in [030]. This is also inaccurate as no reference to stop 28 to axial force is disclosed. The examiner acknowledges that there is an axial force due to the push as described on [030] but this is only in reference to the contact to stop 26 as shown in Figure 1 and not stop 28.

The other end of the pot base is spaced away from the shoulder 38 by a gap a. Furthermore, the drawings and the specification do not show how this is done or for that matter how the spreadable element moves to the left side of Figure 1 into the gap a and past the gap a so that the spreadable element contacts the limit 28 stop disposed at the end of the inner tube. Accordingly, the spreadable element does not contact the limit stop 28 and neither the specification explains how the spreadable element moves to contact the limit stop 28 at the end of the inner tube. This is a new matter rejection.”

**The Term “Limit Stop” Necessarily Implies Contact**

The specification at the paragraphs bridging pages 4 and 5 (paragraph [0023] of the published application) clearly defines two limit stops, an outer stop 26 and an inner stop 28, and clearly relates the stops to movement of the spreading element 16. The Examiner admits that there is contact of the spreading element 16 with the outer stop 26, but refuses to acknowledge that there is contact with the inner stop 28 at the shoulder 38. Applicant respectfully submits that the term “stop” as applied to the inner stop 28 necessarily means that the spreading element 16 must contact the stop 28 to prevent further axial movement.

**The Specification Expressly Teaches Movement Between Stops**

The specification in the paragraphs bridging pages 4 and 5 (paragraph [0023] of the published application) expressly states that “[S]preading element 16, 116 is axially movable within narrow limits between outer limit stop 26, 126 on the free end of adjusting screw 18, 118 and an inner limit stop surface 28, which is formed by the annular surface of collar 32 around guide piece 33, 133.” This is a clear and express teaching of movement between the two “stops,” thereby teaching to one skilled in the art a contact with both of the two stops. Contact with the outer limit stop is already conceded by the Examiner.

**The Specification Expressly Teaches Movement Up To the Inner Stop**

The specification the second full paragraph at page 6 (paragraph [0030] of the published application) expressly states that “...spreading element 16, 116 first being moved, or pushed, in the same direction up to exterior limit stop 26,126. ” This is a clear and express teaching of movement to stop 26, thereby teaching an intended contact with the stop.

**The Admitted Small Gap “a” Is Compatible With Contact With an Interior Limit Stop**

First, the paragraph bridging pages 4 and 5 (paragraph [0023] of the published application) defines the distance between the two stops as only “somewhat greater than the axial length of spreading element 16,” The distance is gap “a”, between the exterior surface of pot base 36 and the annular end face of cylindrical shoulder 38. The Examiner admits that the gap “a” exists and is a small distance, based on the teaching in the second full paragraph on page 6 of the original specification that characterizes the gap as being a “pre-established slight distance from the inner limit stop surface 28.”

Second, the specification in the second full paragraph at page 6 (paragraph [0030] of the published application) expressly deals with a “further axial motion” that results from an “impact like axial stress” on the outer handle and causes the interior element to move “further into the inner cone 27, 127 of spreading element 16” and to necessarily cause the spreading element 16 to move and also “be spread apart radially.” As would be understood by those skilled in the art, such movement, closing the small gap a, would be subject to the limit on further axial movement caused by contact of the spreading element with the stop 28.

**The Provided Model Demonstrates the Claimed Contact**

Finally, the model provided as Exhibit A to the Second Declaration of Klaus Lenhart clearly demonstrates how the embodiment of Figs. 1 and 2 would permit contact of the spreading element 16 with the stops 26 and 28.

**Claims 8, 10, 15 and 16**

Regarding claims 8, 10, 15, and 16, the Examiner states at page 6 of the Office Action that:

“...the recitation ‘including a gap distance’ in claims 8, 10, 15, and 16, line 15, is not supported by the written description requirement. The specification does not have support for the spreadable element being moveable within the gap distance a shown in Figure 1. According to the original specification at page 6, line 28, it describes a slight distance a with respect to an inner limit stop surface 38, but this does not imply or state that the spreading element moves in this distance, which has been equated to the gap as claimed. Furthermore, the drawings and the specification do not show how this is done or for that matter how the spreadable element moves to the left side of Figure 1 into the gap a. Accordingly, this is a new matter rejection.”

Applicant respectfully submits that the model of the adjustable pole, which accompanies the Second Declaration of Klaus Lenhart, and the original disclosure clearly teach a small gap that is closed by the spreading element when an axial force is applied. Moreover, this feature was part of the original disclosure and the present claims are based upon that disclosure, as would be understood by those skilled in the art.

Applicant respectfully submits that support for the claimed limitation exists in the original disclosure and the Applicant clearly was in possession of this feature of the invention at the time the application was filed. Thus, this rejection should be withdrawn.

***Claim Rejections - 35 USC § 112 ¶2***

**Claims 8-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.** This rejection is traversed for at least the following reasons.

**Claims 8 and 10**

In framing the rejection, the Examiner states at page 7 of the Office Action that:

“Regarding claims 8 and 10, the recitation ‘and is contactable with each limit stop’ in lines 15-16 makes unclear how the spreadable element makes contact with the limit stop at the end of the inner tube. What mechanism allows the spreadable element to move towards the limit stop at the end of the inner tube. The drawings merely show the inner taper of the interior element 17 moving toward the limit stop at the adjusting screw due to the thread moving the interior element, as in a power screw. As a result it pushes the spreadable element towards the interior element. However, this would only move the spreadable element toward the limit stop at the end of the screw. Note that there's nothing in the specification or for that matter in the drawings that show how the spreadable element moves back. If one were to remove the inner element from the outer cone, the spreadable element will still remain in place as the corresponding tapers

merely disengage. There's nothing in the drawings that indicates how the spreadable element moves towards the limit stop at the end of the inner tube.”

**The Rejection is Based on an Improper Statutory Section**

First, the provisions of paragraph 2 of 35 U.S.C. § 112 concern the lack of clarity in the language of the claim. The statement that the spreadable element “is contactable with each limit stop” has a clear meaning. The Examiner has no problem understanding the meaning, and the disclosure in the specification is clear, as previously explained above. One of ordinary skill in the art would understand the meaning, and the metes and bounds of the claim based on the phrase. Clearly, the requirements of paragraph 2, of Section 112 are satisfied.

Second, the reasoning given by the Examiner relates to a lack of enabling disclosure. If that is the reason, a new non-final rejection should be made. However, Applicant respectfully submits that the explanation given with regard to the rejection for lack of written description clearly demonstrates that the original disclosure is enabling.

Third, the model provided as Exhibit A to the Second Declaration of Klaus Lenhart clearly demonstrates that a device having components that are designed and arranged in a manner wholly consistent with the original disclosure is enabled and operable.

**Claims 9-12**

These claims would be patentable for the reasons given for parent claim 8.

***Claim Rejections - 35 USC § 103***

**Claims 8, 9, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lenhart, DE-29,706,849, in view of Neuheiten, CH-267,177.** This rejection is traversed for at least the following reasons.

**Claim 8**

Regarding claim 8, Applicant notes that the Examiner repeats the basis for rejection provided in the previous rejection dated August 5, 2008. The only change is the reference to the prior Office Action at page 5, line 12 and the assertion at line 19 that the spreadable element 116 can contact the limit stop on the free end of the adjusting screw 118'.

**The Examiner Admits Lenhart Differs from Claim 8 Based on Contact With Two Limit Stops**

At page 3 of the Office Action, the Examiner admits that Lenhart does not teach that the radially spreadable element is “contactable with each limit stop.” As demonstrated by Applicant in the present Amendment, as supported by the Second Declaration of Klaus Lenhart and the model Exhibit thereto, this limitation is supported by the original disclosure. Thus, by the Examiner’s own admission, the Lenhart reference is deficient with regard to at least this limitation.

**There is No Prior Art That Teaches the Two-Contact Limitation**

The Examiner has cited no prior art to teach the modification of Lenhart to incorporate the limitation that the radially spreadable element is “contactable with each limit stop.” None of the presently cited prior art teaches that a radially spreadable element, having all of the other limitations defined in the claim, is “contactable with each limit stop.”

Accordingly, in the absence of this limitation in the prior art, the claim should be allowed.

**Claim 8 is Patentable over Lenhart in view of Neuheiten for Reasons Given in Prior**

**Amendments**

The claim is patentable for reasons given at pages 12-16 of the Amendment filed on November 10, 2008 and at pages 7-8 of the Supplemental Amendment, including Declaration of Klaus Lenhart, filed on December 18, 2008, which remain valid and are incorporated herein by reference.

**Examiner's Focus Only on a Number of Cones Is Too Simplistic**

The Examiner recites a litany of structures in Lenhart that are alleged to correspond to the claimed structures and admits that “Lenhart fails to disclose the inner cone 122' being only one single inner cone of the spreadable element since spreadable element has two inner cones.” The Examiner ignores all of the other related and interoperable structures in the claim and focuses only on finding a reference that shows both a two cone structure and a one cone structure. Finding that Neuheiten shows embodiments with a single cone and a double cone design, the Examiner concludes that switching from one to the other is obvious.

However, this approach is overly simplistic and ignores the structural relationships among multiple elements that must be changed in order to have such switch provide an effective structure for joining two shafts of a collapsible pole or stick. The combination of structures has to work to accomplish a desired purpose, namely, effective coupling of two shafts together into a rigid pole. The invention accomplishes this result by a specific arrangement of stops, threaded screws, an interior element having one external cone and a radially spreadable element having a mating interior cone and being moveable between the two stops. Simply changing the Lenhart two cone design by cutting off the top cone to yield a one-cone design with fewer parts does not

accomplish this result. More importantly, it does not, and indeed, the Declaration of Lenhart demonstrates that it cannot, provide “an adjustable length pole” that is telescoping and has at least one outer tube and an inner tube, as claimed.

**The Examiner Ignores Evidence Demonstrating Incompatibility That Precludes Achievement of the Claimed Adjustable Length Pole**

In the Response to Arguments at page 18, the Examiner states:

“Applicant argues that submitting a declaration under rule 132 would demonstrate that the two embodiments in Figures 1 and 5 of Lenhart are unrelated and do not represent compatible teachings. In response, it should be first noted that Neuheiten is relied to teach that one can use two cones or one cone. The examiner is not relying solely on Lenhart or for that matter Lenhart's Figure 1. The declaration would possible differentiate the different operations of the two embodiment disclosed but it is the combined teaching of the combined references that would have suggested to use one cone. Is applicant showing that no one ever has made a mechanism with one cone?”

Applicant respectfully submits that the invention is not simply the use of one cone.

Again, the invention, *when viewed as a whole*, is an adjustable length pole that has a specific arrangement of inner and outer tubes, stops, a threaded screw, a threaded interior element having one external cone and a radially spreadable element having a mating interior cone and being moveable between the two stops.

The Declaration of Lenhart has demonstrated that the structure of Lenhart as modified according to Neuheiten to use only one cone, would be inoperative. A structure that is inoperative would not provide an adjustable length pole, as claimed.

Even if one skilled in the art would have considered changing the two cone design of Lenhart to a one cone design, either (1) a measure of invention that merits patent protection or



(2) hindsight on the basis of Applicant's own teachings in the present invention would have been required - otherwise, the structure would be inoperable.

**Inoperability of Lenhart Cannot Be Ignored**

In the Response to Arguments at pages 19 and 20 of the Office Action, the Examiner states that:

“Applicant argues that the combined references were taken without any consideration of how these pieces operate in their environment. In response, it should be noted that how the pieces operate individually is not a prerequisite for combining the references. Further, the fact that one reference operates differently from the other reference does not obviate the fact that it is obvious to make a spreadable element with a single cone versus a double cone. The combined references result the claimed invention.”

Applicant respectfully disagrees, in that the combination of structures proposed by the Examiner would NOT result in “an adjustable length pole,” as claimed.

As demonstrated by the Declaration of Lenhart at pages 6-17, (1) the embodiment illustrated in Fig. 1 of Lenhart is problematic and inoperable, (2), the embodiments of Figs. 1 and 5 of Lenhart are incompatible with each other, and (3) deletion of the upper part of Lenhart's Fig. 5 is unsupported and would make the device inoperable. These factors would necessarily be considered by one skilled in the art having the two references before him. Because of the demonstrated inoperability, one skilled in the art would ignore Lenhart as any basis for an operative design. Moreover, even if one skilled in the art attempted to follow the Examiner's logic in combining the references, the resulting structure would NOT be an adjustable length pole, as claimed, as there would be no adjustability.

**A Teaching of How to Achieve an Operable Structure is Required**

The Examiner asserts that there is no need for any teaching as to how the multiple components would be assembled into an adjustable-length pole, as claimed. Specifically, the Examiner states in the Response to Arguments at page 20 of the Office Action that:

Applicant further argues that the combined references present technical problems and barriers and has not teaching or direction for their assembly. In response, it should be noted that the arguments do not specify what technical problems arise. Further, there is no requirement that the examiner provide a teaching or direction for the assembly.

Applicant respectfully submits that, under the standards for obviousness under *Graham v. John Deere* and *KSR* there must be some teaching as to how the various parts would be assembled to arrive at the claimed adjustable length pole, so that the pole is indeed adjustable and stable. Such teaching may come from the prior art itself or from the knowledge of one skilled in the art. However, technical problems or teachings away from a proposed combination would preclude a combination, as one skilled in the art would not even try to assemble an inoperable structure.

In the present case, by the Examiner's own admission, there has been no demonstration of a teaching as to how the various structures in Lenhart and Neuheiten would be combined to attain an operable adjustable length pole. Indeed, the only evidence in the record is the Declaration of Lenhart demonstrating how and why such teaching does not exist.

**Claims 9 and 12**

These claims would be patentable for reasons given with regard to parent claim 8.

**Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lenhart, DE-29,706,849, in view of Neuheiten, CH-267,177, and further in view of DSI (DE-8,004,343U1).** This rejection is traversed for at least the following reasons.

**Claim 10**

The Examiner failed to examine claim 10 in the previous Office Action dated August 5, 2008, but as explained by the Examiner at page 18 of the present Office Action, the discussion of claim 17 at pages 6-8 of the previous Office Action was actually intended for claim 10.

Regarding claim 10, Applicant notes that the Examiner repeats the basis for rejection of claim 17 as provided in the previous rejection dated August 5, 2008. The only change is the assertion at page 11, lines 1-2 that the spreadable element 116 can contact the limit stop on the free end of the adjusting screw 118'.

**Claim 10 is Patentable over Lenhart in view of Neuheiten and DSI for Reasons**

**Given in Prior Amendments**

The claim is patentable for reasons given at pages 16 and 17 of the Amendment filed on November 10, 2008, and on the basis of the Declaration of Klaus Lenhart, filed on December 18, 2008, which remain valid and are incorporated herein by reference.

**Claim 10 is Patentable over Lenhart in view of Neuheiten and DSI for Reasons**

**Given With Regard To Claim 8**

Applicant respectfully submits that claim 10 is directed to an adjustable length pole having at least the limitations of claim 8, with additional limitations related to the radially

spreadable element being configured as a pot. The claim would be patentable for reasons given above for claim 8.

**Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lenhart, DE-29,706,849, in view of Neuheiten, CH-267,177, and further in view of Kupski, 3,145,669.**

This rejection is traversed for at least the following reasons.

Regarding claim 15, Applicant notes that the Examiner repeats the basis for rejection of claim 15 as provided in the previous rejection dated August 5, 2008. The only change is the reference to the prior Office Action at page 12, line 19 and the assertion at page 14, lines 19-20 that "Given the modification, the axial slots would have had an axial length larger than an axial length of the fins."

**Claim 15 is Patentable over Lenhart in view of Neuheiten and Kupski for Reasons  
Given in Prior Amendments**

The claim is patentable for reasons given at page 17 of the Amendment filed on November 10, 2008 and at page 8 of the Supplemental Amendment, including the Declaration of Klaus Lenhart, filed on December 18, 2008, which remain valid and are incorporated herein by reference.

**Claim 15 is Patentable over Lenhart in view of Neuheiten and Kupski for Reasons  
Given With Regard To Claim 8**

Applicant respectfully submits that amended claim 15 is directed to an adjustable length pole having at least the limitations of claim 8, with additional limitations related to a plurality of axial slots in the radially spreadable element and a plurality of radially protruding fins on the interior element, where the axial slots have an axial length which is larger than the axial length of the fins and the fins are guided in a respective axial slot of the radially spreadable element for

axial movement of the fins within the slots. The claim would be patentable for reasons given above for claim 8. In addition, the stated relationship between the slots and fins that contributes to the attainment of an adjustable length pole is nowhere taught or suggested in the prior art, especially Kupski, for reasons given on the basis of evidence presented in the Lenhart Declaration.

**Claim 15 is Patentable Over Lenhart in view of Neuheiten and Kupski Because of Added Limitations**

Further to clarifying the relationship between the fins and the axial slots, such that the interface between the inner and outer tubes is secure and effective to provide adjustability, the claim has been amended to state that “respective pairs of said axial slots and said radially protruding fins structurally cooperate to permit said interior element to move axially as the threaded element is rotated with respect to said interior element without rotation of said radially spreadable element.”

**The Examiner Distorts and Modifies the Teachings of Kupski Based on Applicant’s Disclosure**

The Examiner states at pages 16 and 17 of the Office Action that:

“Kupski teach, in Figure, 5, an interior element 17 having protruding fins 33 guided in axial slots 30 of a spreading element 16 to prevent the interior element from rotating relative to the spreading element. Therefore, as taught by Kupski, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a fin in the interior element of Lenhart guided in the axial slots of the spreading element of Lenhart to prevent the interior element from rotating relative to the spreading element. Given the modification, the axial slots would have had an axial length larger than an axial length of the fins.”

The only possible suggestion by Kupski is the use of a boss and indentation at a base of an element. There is no suggestion that the indentation would have a shape and size as claimed (axial slot longer than the fin), or that it would function in the manner intended to achieve an adjustable length pole (prevent rotation of spreading element as adjusting screw is turned). These express claim limitations cannot be ignored in assessing the patentability of the invention as now set forth in the application.

**Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lenhart, DE-29,706,849, in view of Neuheiten, CH-267,177, and further in view of DSI, DE8,004,343U1, and Kupski, 3,145,669.** This rejection is traversed for at least the following reasons.

Regarding claim 16, Applicant notes that the Examiner repeats the basis for rejection of claim 16 as provided in the previous rejection dated August 5, 2008. The only change is the reference to the prior Office Action at page 15, line 2 and the assertion at page 17, lines 2-3 that “Given the modification, the axial slots would have had an axial length larger than an axial length of the fins.”

**Claim 16 is Patentable over Lenhart in view of Neuheiten, DSI and Kupski for**

**Reasons Given in Prior Amendments**

The claim is patentable for reasons given at page 17-18 of the Amendment filed on November 10, 2008 and at pages 8-9 of the Supplemental Amendment, including the Declaration of Klaus Lenhart, filed on December 18, 2008, which remain valid and are incorporated herein by reference.

**Claim 16 is Patentable over Lenhart in view of Neuheiten and Kupski for Reasons  
Given With Regard To Claim 8**

Applicant respectfully submits that amended claim 16 is directed to an adjustable length pole having at least the limitations of claim 8, with additional limitations related to a plurality of axial slots in the radially spreadable element and a plurality of radially protruding fins on the interior element, where the axial slots have an axial length which is larger than the axial length of the fins and the fins are guided in a respective axial slot of the radially spreadable element for axial movement of the fins within the slots.

The claim would be patentable for reasons given above for claim 8. In addition, the stated relationship between the slots and fins that contributes to the attainment of an adjustable length pole is nowhere taught or suggested in the prior art, especially Kupski, for reasons given on the basis of evidence presented in the Lenhart Declaration.

**Claim 16 is Patentable Over Lenhart in view of Neuheiten and Kupski Because of  
Added Limitations**

Further to clarifying the relationship between the fins and the axial slots, such that the interface between the inner and outer tubes is secure and effective to provide adjustability, the claim has been amended to state that “respective pairs of said axial slots and said radially protruding fins structurally cooperate to permit said interior element to move axially as the threaded element is rotated with respect to said interior element without rotation of said radially spreadable element.”

### ***Conclusions***

#### **Claims 8-16**

Applicant has demonstrated with tangible and unrefutable evidence that the invention, as claimed in the independent claims 8, 15 and 16 are fully supported by the original disclosure, are clear and concise, and are not taught or even suggested by the prior art. Further, Applicant has demonstrated that the prior art is inoperable, both as disclosed and when structured in the manner conjured up by the Examiner. Finally, Applicant has demonstrated that the features of the invention, as now recited in the claims and as previously recognized by the Examiner to be a basis for patentability, are not obvious and, therefore, support prompt allowance of these claims.

#### **Claims 21, 23, 24 and 25**

As previously demonstrated herein, claims 21 and 23 should have been examined and should NOT have been withdrawn from consideration. These claims further define the structure of the slots in the radially expandable element and the fins on the internal element with detail that simply cannot be found in the prior art and would require pure hindsight to develop from the limited disclosure of the prior art. For the reasons given in the previous amendment, as supported by the Declaration of Lenhart, claims 21 and 23, and new dependent claims 24 and 25 should be allowed

#### **Claim 26**

All of the pending claims are directed to an “adjustable length pole.” As already asserted herein, the combination of bits and pieces of prior art teachings from diverse references that are directed to diverse applications, cannot achieve an adjustable length pole. The references are both inoperable and incompatible, as demonstrated by the Declaration of Lenhart and advocated in the prior amendments filed on November 10, 2008 and December 18, 2008, and in the



remarks herein. New claim 26 expressly claims the pole in assembled form. On the basis of the prior showings by Applicant, such pole cannot be achieved by the prior art as modified and then combined by the Examiner, as the structure simply will not work. Thus, this claim should be allowed.

**Request for Careful Consideration of the Lenhart Declarations**

Finally, Applicant notes that at page 21 of the Office Action, the Examiner criticizes the Lenhart Declaration, particularly with regard to the illustrations of Figs. 5A-5D and the statements with respect to Figure 5B. In particular, the Examiner comments that:

“.....applicant remarks that a ‘further limit stop (nut displayed in Figure 5B) has to be added to the screw’. In response, this analysis is inaccurate as nothing has to be added because the screw already has a nut which makes up the limit stop.”

Applicant respectfully submits that the Examiner has misread the Declaration and respectfully notes that a cutting of the structure in Fig. 5A, as suggested by the Examiner in formulating the rejection, would not have a nut. Applicant added the nut in Fig. 5B for purposes of the Declaration in order to show that Lenhart would be inoperative if the top cone is simply cut off, and that additional design and structural modifications that are not taught by Lenhart would be needed.

In view of the enormous expense and effort that has been devoted to the prosecution of this application and the demonstration that the claims define an invention that is patentable over the prior art, Applicant respectfully requests careful consideration of all of the facts presented and offers to answer any questions the Examiner may have with regard to these critical matters.

*Allowable Subject Matter*

The Examiner states that claim 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 1st and 2nd paragraphs, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The claim should now be considered patentable since the rejections under Section 112 have been overcome.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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WASHINGTON OFFICE

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Alan J. Kasper  
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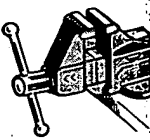
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**vir-i-des-cent** \vir-ə-'de-s-nt\ *adj* [L *viridis* green] (ca. 1847): slightly green: GREENISH  
**vir-id-i-an** (və-'ri-dē-ən) *n* [L *viridis*] (1882): a chrome green that is a hydrated oxide of chromium  
**vir-id-i-ty** (və-'ri-dē-tē) *n* [ME *viridite*, fr. MF *viriditē*, fr. L *viriditas*, fr. *viridis*] (15c) 1 a: the quality or state of being green b: the color of grass or foliage 2: naive innocence  
**vir-ile** \vir-əl, 'vir-īl, Brit also 'vir-īl\ *adj* [MF or L; MF *viril*, fr. L *virilis*, fr. *vir* man, male; akin to OE & OHG *wer* man, Skt *virā*] (15c) 1: having the nature, properties, or qualities of an adult male; specif: capable of functioning as a male in copulation 2: ENERGETIC VIGOROUS 3 a: characteristic of or associated with men: MASCULINE b: having traditionally masculine traits esp. to a marked degree 4: MASTERFUL FORCEFUL — **vir-ile-ly** *adv*  
**vir-il-ism** \vir-ə-'li-zəm\ *n* (1922): the appearance of secondary male characteristics in the female  
**vir-il-i-ty** (və-'ri-lē-tē, Brit also vī-) *n* (1586): the quality or state of being virile: a: MANHOOD b: manly vigor: MASCULINITY  
**vir-i-on** \vir-ē-ən, 'vir-ē-\ *n* [F, fr. *virion* viral (fr. *virus* virus) + -on] (1959): a complete virus particle that consists of an RNA or DNA core with a protein coat sometimes with external envelopes and that is the extracellular infective form of a virus  
**vir-oid** \və-'rōid\ *n* [NL *virus* + E -oid] (1971): any of several causative agents of plant disease that consist solely of a single-stranded RNA of low molecular weight arranged in a closed loop or a linear chain  
**vir-ol-o-gy** \vir-ə-'lō-jē\ *n* [NL *virus* + ISV -logy] (ca. 1935): a branch of science that deals with viruses — **vir-ol-log-i-cal** \vir-ə-'lō-jē-kəl\ or **vir-ol-log-ic** \vī-'lō-jē-kəl\ *adj* — **vir-ol-log-i-cal-ly** \vī-'lō-jē-kəl-ē\ *adv* — **vir-ol-o-gist** \vir-ə-'lō-jē-st\ *n*  
**vir-tu** \vər-'tū, vīr-'tū\ *n* [It *virtù*, lit., virtue, fr. L *virtus*, *virtus*] (1722) 1: a love of or taste for curios or objects d'art 2: productions of art esp. of a curious or antique nature: OBJETS D'ART  
**vir-tu-al** \vər-'chə-wəl, -chal; 'vorch-wəl\ *adj* [ME, possessed of certain physical virtues, fr. ML *virtualis*, fr. L *virtus* strength, virtue] (1684) 1: being such in essence or effect though not formally recognized or admitted (a ~ dictator) 2: of, relating to, or using virtual memory 3: of, relating to, or being a hypothetical particle whose existence is inferred from indirect evidence (~ photons) — compare REAL 3  
**virtual image** *n* (1859): an image (as seen in a plane mirror) formed of points from which divergent rays (as of light) seem to emanate without actually doing so  
**vir-tu-al-i-ty** \vər-'chə-'wə-lē-tē\ *n*, *pl* -ties (1646) 1: ESSENCE 2: potential existence: POTENTIALITY  
**vir-tu-al-ly** \vər-'chə-wəl-ē, -chə-lē; 'vorch-wəl-ē\ *adv* (15c) 1: almost entirely: NEARLY 2: for all practical purposes (~ unknown disks) for a computer that can be used as if it were an extension of the computer's internal memory — called also *virtual storage*  
**virtual reality** *n* (1989): an artificial environment which is experienced through sensory stimuli (as sights and sounds) provided by a computer and in which one's actions partially determine what happens in the environment  
**vir-tue** \vər-'chū\ *n* [ME *virtu*, fr. OF, fr. L *virtus*, *virtus* strength, manliness, virtue, fr. *vir* man — more at VIRILE] (13c) 1 a: confor-mity to a standard of right: MORALITY b: a particular moral excel-lence 2 *pl*: an order of angels — see CELESTIAL HIERARCHY 3: a ben-eficial quality or power of a thing 4: manly strength or courage: VALOR 5: a commendable quality or trait: MERIT 6: a capacity to act: POTENCY 7: chastity esp. in a woman — **vir-tue-less** \vī-'chū-ləs\ *adj* — by virtue of or in virtue of: through the force of: by authority of  
**vir-tu-o-sa** \vər-'chū-'ō-sə, -zə\ *n* [It, fem. of *virtuoso*] (1668): a girl or woman who is a virtuoso  
**vir-tu-o-s-i-ty** \vər-'chū-'ō-sē-tē\ *n*, *pl* -ties (1673) 1: a taste for or interest in virtu 2: great technical skill (as in the practice of a fine art)  
**vir-tu-o-so** \vər-'chū-'ō-sō, -jōz\ *n*, *pl* -sōs or -sī \vī-'chū-'ō-sē, -jōz\ [It, fr. *virtuoso*, *adj.*, virtuous, skilled, fr. L *virtuosus* virtuous, fr. L *virtus*] (1651) 1: an experimenter or investigator esp. in the arts and sciences: SA-VANT 2: one skilled in or having a taste for the fine arts 3: one who excels in the technique of an art; esp.: a highly skilled musical per-former (as on the violin) 4: a person who has great skill at some endeavor (a computer ~) (a ~ at public relations) — **vir-tu-o-sic** \vī-'chū-'ō-sik, -zik\ *adj* — **virtuoso** *adj*  
**vir-tu-ous** \vər-'chə-wəs, 'vorch-wəs\ *adj* (14c) 1: POTENT, EFFICA-CIOUS 2 a: having or exhibiting virtue b: morally excellent: RIGH-TEOUS 3: CHASTE *syn* see MORAL — **vir-tu-ous-ly** *adv* — **vir-tu-ous-ness** *n*  
**vir-u-cid-al** \vī-'rə-'sī-dəl\ *adj* [NL *virus* + E -cide] (1925): having the capacity to or tending to destroy or inactivate viruses (~ agents) (~ activity) — **vir-u-cide** \vī-'rə-'sī-d\ *n*  
**vir-u-lence** \vir-ə-'lən(t)s, 'vir-ə-\ *n* (1663): the quality or state of being virulent: as a: extreme bitterness or malignity of temper: RAN-COR b: MALIGNANCY, VENOMOUSNESS (ameliorate the ~ of a disease) c: the relative capacity of a pathogen to overcome body defenses  
**vir-u-len-cy** \vī-'lən(t)-sē\ *n* (ca. 1617): VIRULENCE  
**vir-u-lent** \vī-'lən(t)\ *adj* [ME, fr. L *virulentus*, fr. *virus* poison] (14c) 1 a: marked by a rapid, severe, and malignant course (a ~ infection) b: able to overcome bodily defensive mechanisms (a ~ pathogen) 2: extremely poisonous or venomous 3: full of malice: MALIGNANT (~ racist) 4: objectionably harsh or strong — **vir-u-lent-ly** *adv*  
**vir-u-lif-er-ous** \vir-ə-'li-f(ə)-rəs, 'vir-ə-\ *adj* [virulent + -ferous] (ca. 1899): containing, producing, or conveying an agent of infection and esp. a virus (~ insects)  
**vi-rus** \vī-'rəs\ *n* [L *venom*, poisonous emanation; akin to Gk *ios* poi-son, Skt *viśā*; in senses 2 & 4, fr. NL, fr. L] (1599) 1 *archaic*: VENOM 2 a: the causative agent of an infectious disease b: any of a large group of submicroscopic infective agents that are regarded either as extremely simple microorganisms or as extremely complex molecules, that typically contain a protein coat surrounding an RNA or DNA core of genetic material but no semipermeable membrane, that are capable of growth and multiplication only in living cells, and that cause various important diseases in humans, lower animals, or plants;

also: FILTERABLE VIRUS c: a disease caused by a virus 3: some that poisons the mind or soul (the force of this ~ of prejudice — Waters) 4: a computer program usu. hidden within another in-gly innocuous program that produces copies of itself and in-ter into other programs and that usu. performs a malicious ac-tion (destroying data)  
**vis** \vis\ *n*, *pl* vi-ses \vī-'rēz\ [L — more at VIM] (1601): FORCE  
**vis-a** \vī-'zə also -sə\ *n* [F, fr. L, neut. pl. of *visus*, pp.] (1831) 1: that has been examined and that the bearer may proceed 2: nature of formal approval by a superior upon a document  
**vis-a** \vī-'zə also -sə\ *adj* [F, fr. L, neut. pl. of *visus*, pp.] (1831) 1: a visa to (a passport)  
**vis-age** \vī-'zjə\ *n* [ME, fr. OF, fr. *vis* face, fr. L *visus* sight, fr. *vis* see — more at VIT] (14c) 1: the face, countenance, or appearance person or sometimes an animal 2: ASPECT, APPEARANCE (grimy min-ing town) — **vis-aged** \vī-'zjəd\ *adj*  
**vis-a-vis** \vī-'zə-'vī, vīs- also -ā-'vī\ *prep* [F, lit., face-to-face] (1) 1: face-to-face with 2: in relation to 3: as compared with  
**vis-a-vis** *n*, *pl* vis-à-vis \vī-'zə-'vīz\, -ā-\ (ca. 1757) 1: one th face-to-face with another 2 a: ESCORT, DATE b: COUNTERPAR  
**TETE-À-TETE**  
**vis-à-vis** *adv* (1870): in company: TOGETHER  
**vis-a-vis** \vī-'zə-'vī\ *var* of BISAYAN  
**vis-ca-cha** \vis-'kə-'chə\ *n* [Sp *vizcachá*, fr. Quechua *wisk'acha*] (1) 1: any of several So. American burrowing rodents (genera *Lagotis* and *Lagidium*) closely related to the chinchilla  
**viscera** *pl* of VISCUS  
**vis-cer-al** \vis-'sə-rəl, 'vis-rəl\ *adj* (1575) 1: felt in or as if in the cera: DEEP (~ conviction) 2: not intellectual: INSTINCTIVE UN-SONING (~ drives) 3: dealing with crude or elemental emo-tions: EARTH (a ~ novel) 4: of, relating to, or located on or among viscera: SPLANCHNIC — **vis-cer-al-ly** \vī-'sə-rəl-ē\ *adv*  
**vis-cid** \vī-'sɪd\ *adj* [LL *viscidus*, fr. L *viscum* birdlime — more at COUS] (1635) 1 a: having an adhesive quality: STICKY b: hav-ing glutinous consistency: VISCIOUS 2: covered with a sticky layer — **vis-cid-i-ty** \vī-'sɪd-ē-tē\ *n* — **vis-cid-ly** \vī-'sɪd-ē-lē\ *adv*  
**vis-co-elast-ic** \vis-'kō-'las-tik\ *adj* [viscous + -o- + elastic] (1) 1: having appreciable and conjoint viscous and elastic properties (~ materials as asphalt); also: constituting or relating to the stat-viscoelastic materials (~ data) (~ properties) — **vis-co-elast-ic-ly** \vī-'sɪ-ti-'sə-tē, -tē\ *adv*  
**vis-com-e-ter** \vis-'kə-mə-tər\ *n* [viscosity + -meter] (ca. 1883) instrument with which to measure viscosity — **vis-co-met-ric** \vī-'me-trik\ *adj* — **vis-com-e-try** \vī-'mə-tre-\ *n*  
**vis-cose** \vis-'kōs, -kōz\ *n* [obs. *viscosae*, *adj.*, viscous] (1896) viscous golden-brown solution made by treating cellulose with ca-alkali solution and carbon disulfide and used in making rayon, films of regenerated cellulose 2: viscose rayon  
**vis-cose** *adj* (1900): of, relating to, or made from viscose  
**vis-co-sim-e-ter** \vis-'kə-'sī-mə-tər\ *n* [ISV viscosity + -meter] (1868): VISCOMETER — **vis-cosi-met-ric** \vī-'sɪ-kə-'sī-met-rik\ *adj*  
**vis-cos-i-ty** \vis-'kə-sē-tē\ *n*, *pl* -ties [ME *viscositas*, fr. MF *viscosi-tas*, fr. L *viscositas*, fr. LL *viscosus* viscous] (15c) 1: the qu or state of being viscous 2: the property of resistance to flow, fluid or semifluid 3: the ratio of the tangential frictional force unit area to the velocity gradient perpendicular to the direction of of a liquid — called also *coefficient of viscosity*  
**viscosity index** *n* (1929): an arbitrary number assigned as a mea-sure of the constancy of the viscosity of a lubricating oil with chang-temperature with higher numbers indicating viscosities that ch little with temperature  
**vis-count** \vī-'kaunt\ *n* [ME *viscounte*, fr. MF *visconte*, fr. ML *vis-comit*, *vicecomes*, fr. LL *vice-vice- + comit*, comes count — mor-COUNT] (15c): a member of the peerage in Great Britain ranking be an earl and above a baron — **vis-count-ry** \vī-'kaunt(r)-sē\ *n* — *county* \vī-'kaunt-tē\ *n*  
**vis-count-ess** \vī-'kaunt-əs\ *n* (15c) 1: the wife or widow of a vis-count 2: a woman who holds the rank of viscount in her own right  
**vis-cous** \vis-'kəs\ *adj* [ME *viscosus*, fr. LL *viscosus* full of birdi-viscous, fr. L *viscum* mistletoe, birdlime; akin to OHG *wisula* che Gk *ixos* mistletoe] (14c) 1: VISCID 2: having or character-ized by viscosity (~ flow) — **vis-cous-ly** *adv* — **vis-cous-ness** *n*  
**vis-cus** \vis-'kəs\ *n*, *pl* vis-ceri \vī-'sə-rē\ [L (pl. *viscera*)] (1651) an internal organ of the body; esp.: one (as the heart, liver, or in-time) located in the great cavity of the trunk proper 2 *pl*: HEART 4  
**vis-e** \vis\ *n* [MF *vis* screw, something winding, fr. L *vis* vine — more at WITHY] (1500) 1: any of various tools with two jaws for holding work that close usu. by a screw, lever, or cam 2: something likened to a vise (economic ~ of slow growth and rampant price increases — David Milne) — **vis-e-like** \vī-'līk\ *adj*  
**vis-e** *vt* **vis-ed**; **vis-ing** (1602): to hold, force, or squeeze with or as if with a vise  
**vis-é** \vī-'zē, vī-\ *vt* **vis-éd** or **vis-éed**; **vis-é-ing** [F, pp. of *viser* to visa, fr. *visa*] (1810) — *visa*  
**vis-é** *n* (1842): *visa*  
**Vish-nu** \vī-'sh-, 'jñu\ *n* [Skt *Vishnu*] (1638): the preserver god of Hindu sacred triad — compare BRAHMA, SIVA  
**vis-i-bil-i-ty** \vī-'zə-'bi-lē-tē\ *n*, *pl* -ties (1581) 1: the quality or s of being visible 2 a: the degree of clearness of the atmosphere; g: the greatest distance toward the horizon at which prominent ob-jects can be identified with the naked eye b: capability of being re-noticed c: capability of affording an unobstructed view d: PUB-ITY 2d 3: a measure of the ability of radiated energy to evoke vi-sensation  
**vis-i-ble** \vī-'zə-'bəl\ *adj* [ME, fr. MF or L; MF, fr. L *visibilis*, fr. vi-pp. of *videre* to see] (14c) 1 a: capable of being seen (stars ~ to naked eye) b: situated in the region of the electromagnetic spec-trum perceptible to human vision (~ light) — used of radiation hav-ing wavelength between about 400 nanometers and 700 nanometers 2



vise 1

(19) **United States**(12) **Patent Application Publication**  
**Lenhart**(10) **Pub. No.: US 2005/0207829 A1**(43) **Pub. Date: Sep. 22, 2005**(54) **ADJUSTABLE-LENGTH TUBE, IN PARTICULAR FOR POLES**(76) **Inventor: Klaus Lenhart, Ohmden (DE)**

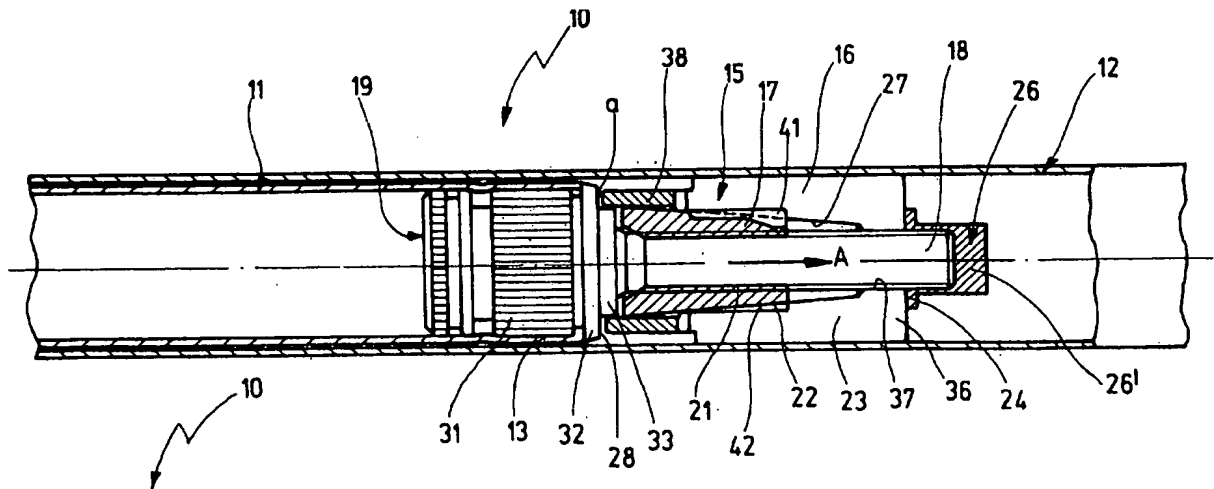
Correspondence Address:

**DREISS, FUHLENDORF, STEIMLE & BECKER****POSTFACH 10 37 62****D-70032 STUTTGART (DE)**(21) **Appl. No.: 10/511,294**(22) **PCT Filed: Apr. 11, 2003**(86) **PCT No.: PCT/EP03/03805**(30) **Foreign Application Priority Data**

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**Publication Classification**(51) **Int. Cl.<sup>7</sup> ..... F16B 7/10**(52) **U.S. Cl. .... 403/109.5**(57) **ABSTRACT**

An adjustable-length tube (10) for sticks, having an outer tube (12) and an inner tube (11) that can be inserted telescope-like into the outer tube (12) for adjusting the length of the tube, and having a spreading device (15) that is supported at the insertion end of the inner tube (11), the spreading device being able to clamp the inner tube (11) axially in the outer tube (12) and having a spreading element (16) that can be radially pressed apart and that is furnished with an inner cone (27), an interior element (17) that is provided with a reverse-oriented outer cone (22) and that is accommodated in the spreading element (16) so as to be axially movable, and an adjusting screw (18) that is axially oriented and is supported in a rotationally fixed manner on the inner tube (11), the adjusting screw having an operational connection to an internally threaded bore (21) in the interior element (17). So that an adjustable-length tube of this type responds to impact-like axial stresses by continuing to clamp rather than sliding or giving way, provision is made that the inner cone (27) of the spreading element (16) is situated such that it opens in the direction of the inner tube (11), and the spreading element (16) is supported between an inner limit stop (28) on the inner tube (11) and an exterior limit stop (26) on the free end of the adjusting screw (18) so as to be axially movable within narrow limits.



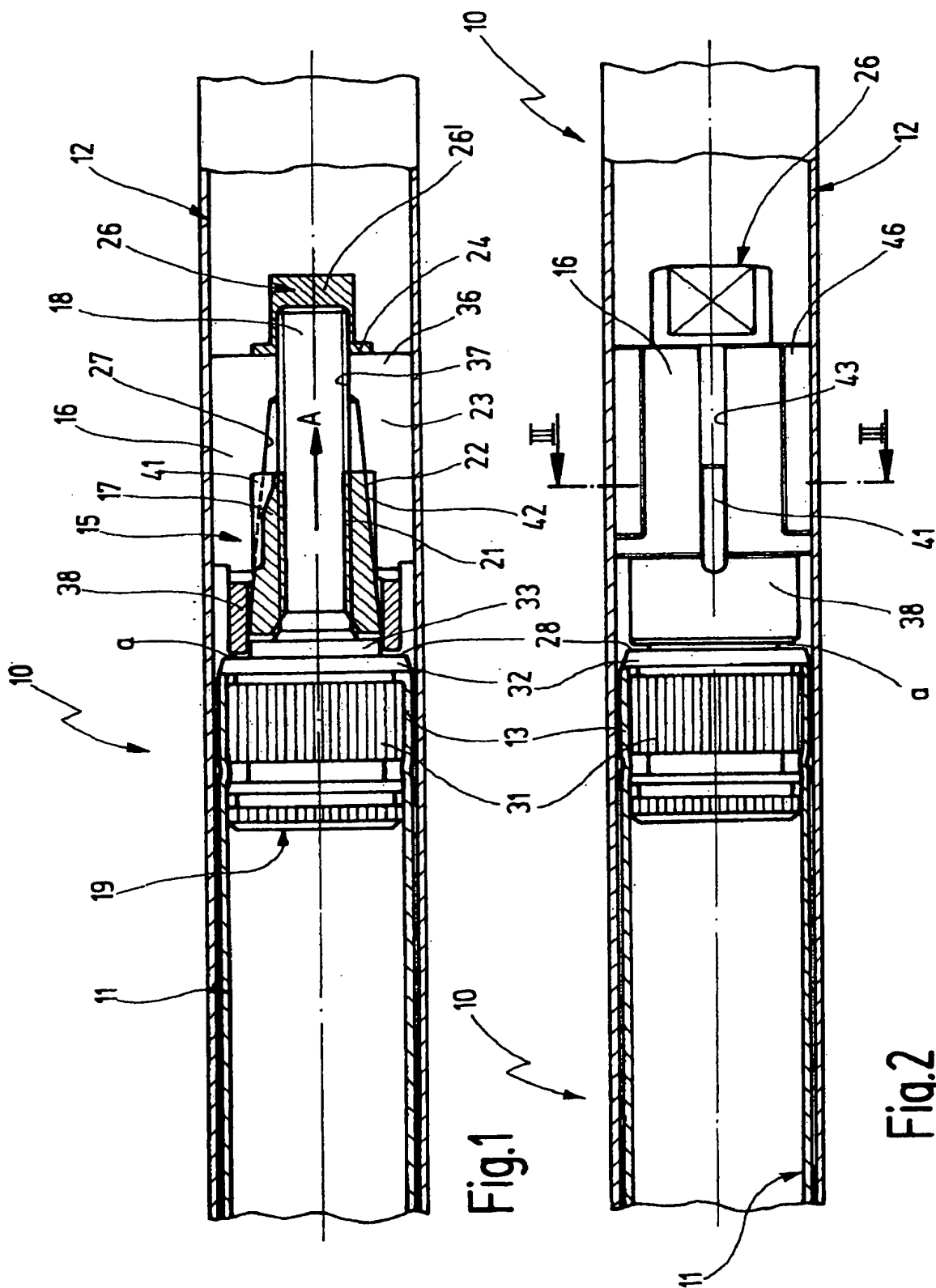


Fig.1

Fig.2

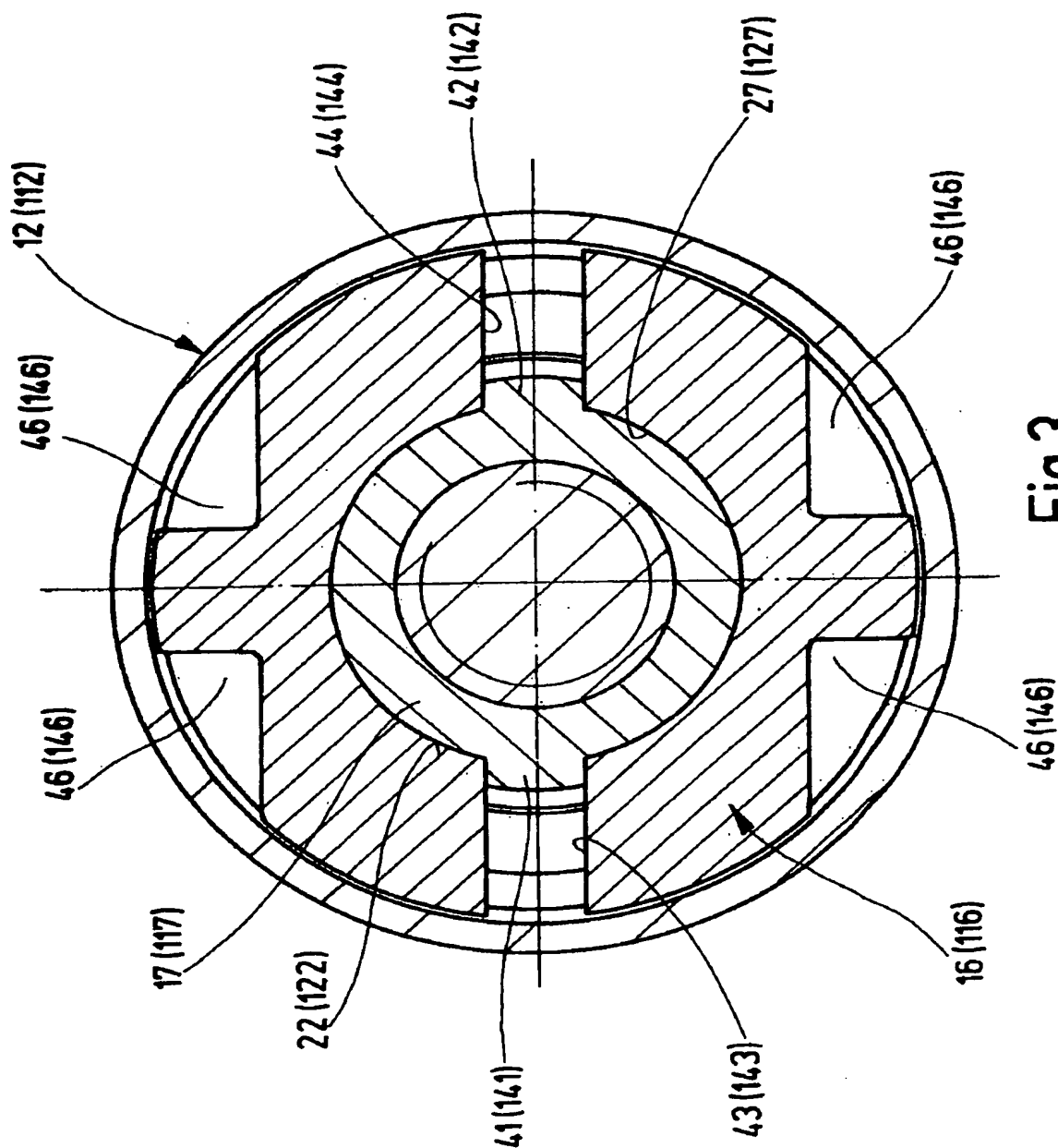
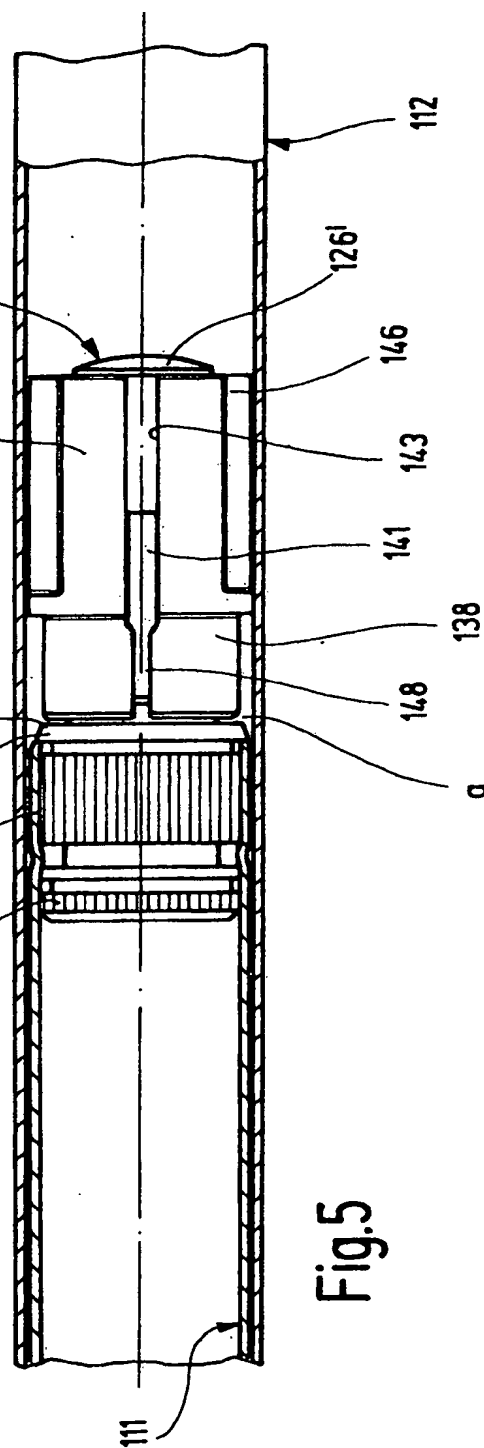
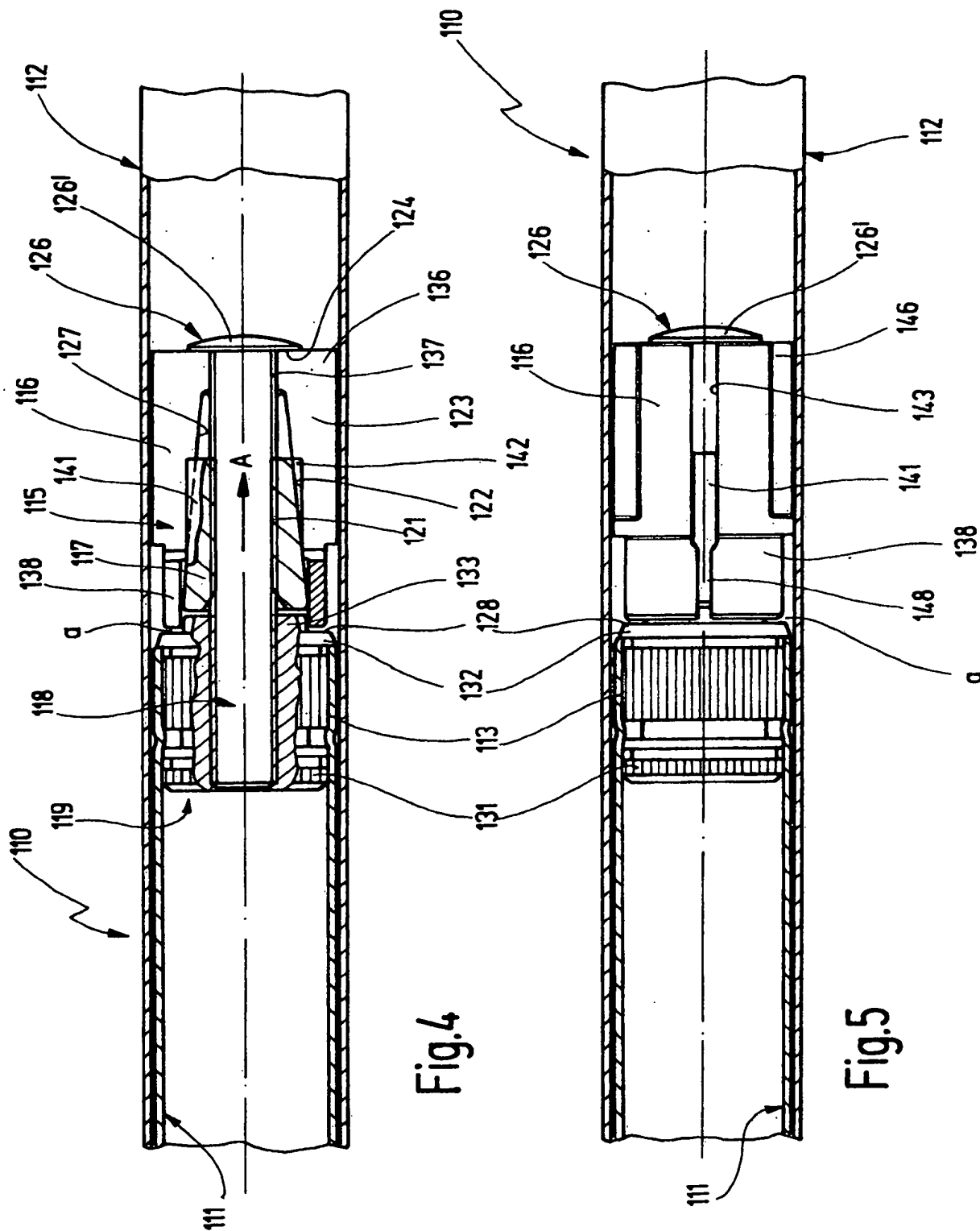


Fig. 3





## ADJUSTABLE-LENGTH TUBE, IN PARTICULAR FOR POLES

[0001] The present invention relates to an adjustable-length tube, especially for sticks,<sup>1</sup> in accordance with the preamble of claim 1.

[0002] In an adjustable-length tube such as is known from DE 297 06 849 U1, the spreading element is provided with a tapering inner cone oriented towards the inner tube, whereas the corresponding interior element that is provided with the outer cone is displaced towards the inner tube by the adjusting screw so that the spreading device can grab hold. In this manner, although the result is a relatively parallel clamping over the entire axial length of the spreading element, nevertheless it has been found that in response to impact-like stresses on the stick tip from the handle-side of an adjustable-length stick, an axial displacement of the outer tube with respect to the inner tube cannot always be avoided and especially not when, in the twisting motion, insufficient force has been applied for purposes of clamping.

[0003] Furthermore, from DE 297 08 829 U1, an adjustable-length tube is known, in which the interior element that is provided with the outer cone is formed by the forward free end of the adjusting screw, and the spreading element that is provided with the inner cone is moved axially on the adjusting screw. In this context, although the inner cone of the spreading element is opened towards the inner tube, nevertheless the same aforementioned disadvantages arise here if the spreading element is axially fixed in the spread-apart state. In this case as well, a relative motion between the outer tube and the spreading element can occur.

[0004] The objective of the present invention is to create an adjustable-length tube, especially for sticks, of the species cited above, which, in response to impact-like axial stresses, continues to clamp rather than slide or give way.

[0005] <sup>1</sup> Translator's note: The two reference patents cited on this page refer to "walking sticks and ski poles" but the present application only mentions "sticks" (Stoecke). I have translated the latter German word as "sticks" despite the fact that this word in English can have several other additional meanings (e.g., in sports, "hockey sticks").

[0006] The features indicated in claim 1 are put forward to achieve this objective in an adjustable-length tube, especially for sticks, of the aforementioned species.

[0007] As a result of the features according to the present invention, it is achieved that in response to an aforementioned impact-like stress, the holding force between the spreading element, or inner tube, and the outer tube is increased, because as a result of the relative axial movability of the interior element and the spreading element, the former is able to penetrate further into the inner cone of the spreading element. Even in the case of a telescope mechanism that is tightened using too little torque, the result is essentially a further spreading, which in turn reinforces the clamping force in the direction of the stress, so that even in these cases a displacement or a relative motion is prevented.

[0008] A jam-free guiding of the spreading element within the given axial movability is provided by the features as recited in claim 2 and/or 3.

[0009] Advantageous embodiments with regard to the outer limit stop for the spreading element will become apparent from the features of claim 4 or those of claim 5. In the former case, the assembly of the spreading element takes place before the attachment of the outer limit stop, whereas in the latter case, with the limit stop already provided, the spreading element is configured such that it can be placed onto the adjusting screw and the interior element radially.

[0010] One advantageous embodiment of the inner limit stop will become apparent from the features as recited in claim 6.

[0011] The features as recited in claim 7 are put forward to achieve a rotationally fixed axial movability of the interior element with respect to the spreading element.

[0012] Further details of the present invention can be derived from the following description, in which the present invention is described in greater detail and is explained on the basis of the exemplary embodiments depicted in the drawing. In the latter:

[0013] FIG. 1 in a partial longitudinal cutaway and truncated view depicts an adjustable-length tube according to a first exemplary embodiment of the present invention,

[0014] FIG. 2 depicts a partial longitudinal cutaway view, rotated 90° with respect to FIG. 1, of the first exemplary embodiment,

[0015] FIG. 3 depicts a view along the line III-III of FIG. 2,

[0016] FIG. 4 depicts a representation corresponding to FIG. 1, but in accordance with a second exemplary embodiment of the present invention, and

[0017] FIG. 5 depicts a representation corresponding to FIG. 2, but in accordance with the second exemplary embodiment of the present invention.

[0018] In the connecting segments of an adjustable-length tube 10, 110, depicted in the drawing in accordance with two exemplary embodiments, an inner tube 11, 111 is guided telescope-like in an outer tube 12, 112. For this purpose, inner tube 11, 111, at its end 13, 113 that is facing outer tube 12, 112, is provided with a spreading device 15, 115, using which inner tube 11, 111 can be fixed at any position within the outer tube 12, 112 in a clamping manner.

[0019] Spreading device 15, 115 has an exterior element in the form of a spreading element 16, 116, an interior element 17, 117, and an adjusting screw, or externally threaded rod 18, 118. Externally threaded rod 18, 118, which is arranged in the axial direction of tube 10, 110, is supported at its one end area in a rotationally fixed manner on insertion end 13, 113 of inner tube 11, 111. For this purpose, externally threaded rod 18, 118 is inserted, or screwed, into an end plug 19, 119, or is integrally configured on the latter, or the like, and is axially fixed and held in a rotationally fixed manner in the end plug using adhesive or the like. End plug 19, 119 is also axially fixed and supported in a rotationally fixed manner in inner tube 11, 111.

[0020] Interior element 17, 117 by its axial central interior thread 21, 121 is screwed onto externally threaded rod 18, 118. Interior element 17, 117 is provided on its exterior side with a cone 22, 122, or it is configured in a conical manner. Outer cone 22, 122 tapers toward the free end of externally

threaded rod 18, 118. Externally threaded rod 18, 118 penetrates internally threaded bore 21, 121 of interior element 17, 117 and is connected at its protruding free end in a rotationally fixed manner to an exterior limit stop 26, 126.

[0021] Exterior-side spreading element 16, 116 on its spreadable main body 23, 123 has an inner cone, or interior taper 27, 127, whose slope corresponds to that of outer cone, or exterior taper 22, 122 of interior element 17, 117. According to the graphic depiction, interior element 17, 117 is accommodated without play in spreading element 16, 116, which is oriented in the contrary direction, outer cone 22, 122 being shorter than inner cone 27, 127. In accordance with the depicted arrangement, inner cone, or interior taper 27, 127 of spreading element 16, 116 opens towards inner tube 11, 111. By way of example, spreading element 16, 116 can be made of plastic, and interior element 17, 117 can be made of metal or plastic.

[0022] Integral end plug 19, 119 is provided with an interior part 31, 131, which is supported in inner tube 11, 111 so as to be prevented from rotating or sliding, and a collar 32, 132, which lies on the annular end face of inner tube 11, 111. Protruding from collar 32, 132 is a guide piece 33, 133 for spreading element 16, 116, the guide piece having a smaller diameter than the latter.

[0023] Spreading element 16, 116 is roughly pot shaped, pot base 36, 136 having a through bore 37, 137, which is penetrated by the free end area of adjusting screw 18, 118. Pot base 36, 136 is axially movable relative to adjusting screw 18, 118. Main body 23, 123 of spreading element 16, 116, which on the exterior periphery can be provided with one or more friction linings, can be coated therewith, or can be configured through its surface composition (for example, longitudinal ribs) so as to achieve an increased frictional force with respect to the interior periphery of outer tube 12, 112, has, on its end facing away from pot base 36, 136 and facing inner tube 11, 111, a cylindrical shoulder 38, 138, that is smaller in its exterior diameter, in which guide piece 33, 133 can engage at its end side. In this context, between guide piece 33, 133 and spreading element 16, 116, enough play is available, so that the latter can move unhindered both axially and radially. Therefore, spreading element 16, 116 is axially movable within narrow limits between outer limit stop 26, 126 on the free end of adjusting screw 18, 118 and an inner limit stop surface 28, 128, which is formed by the annular surface of collar 32, 132 around guide piece 33, 133. The distance between both limit stop surfaces 24, 124 and 28, 128 is somewhat greater than the axial length of spreading element 16, 116 between the exterior surface of pot base 36, 136 and the annular end face of cylindrical shoulder 38, 138.

[0024] In the exemplary embodiment of FIGS. 1 through 3, exterior limit stop 26 is formed by a cap 26', which is attached to the free end of adjusting screw 18, for example, by being screwed, pressed, glued, plastic-extruded, or attached in some other way. Cap 26' has a radial edge 24, which can come into contact with spreading element 16.

[0025] In the exemplary embodiment of FIGS. 4 and 5, exterior limit stop 126 is configured as a head 126' that is formed on the free end of adjusting screw 118, interior annular surface 124 of the head constituting the limit stop surface for spreading element 116.

[0026] Interior element 17, 117 on each of two diametrically opposite peripheral areas of outer cone 22, 122 has a

fin 41, 42, and 141, 142, whose longitudinal end face runs parallel to the stick axis. Each fin 41, 42, and 141, 142 is axially guided in a correspondingly wide slot 43, 44, and 143, 144 of spreading element 16, 116. In this manner, when interior element 17, 117 moves axially relative to spreading element 16, 116, it cannot rotate with respect to the latter. Both slots 43, 44, and 143, 144 are provided essentially over the longitudinal extension of main body 23, 123 of spreading element 16, 116, i.e., they only penetrate into the area of cylindrical shoulder 38, 138 to an insignificant extent. In other words, this also means that the greatest radial dimension of diametrically opposite fins 41, 42, and 141, 142, is equal to the interior diameter of cylindrical shoulder 38, 138.

[0027] As can be seen from FIG. 3, which essentially applies to both exemplary embodiments, spreading element 16, 116 is furnished on its exterior periphery with four notches 46 that are all axially and centrally symmetrical to each other, which run in the longitudinal direction and extend over virtually the entire length of main body 23, 123 of spreading element 16, 116.

[0028] Generated in this manner are defined, peripheral clamping areas of spreading element 16, 116. In the exemplary embodiment of FIGS. 1 through 3, after spreading device 16 is fixed in inner tube 11, interior element 17 is screwed onto the free end of adjusting screw 18, and thereafter spreading element 16 is placed over adjusting screw 18. Subsequently, exterior limit stop 26 is attached at the protruding end of adjusting screw 18, after which the end of inner tube 11, which has been completed in this manner, can be inserted into outer tube 12.

[0029] In the exemplary embodiment of FIGS. 4 and 5, in which adjusting screw 118 has molded head 126' and in which interior element 117 is screwed from the other side of adjusting screw 118, before adjusting screw 118 has been fixedly joined to end plug 119, spreading element 116 (if it has not been threaded first) must subsequently be placed over adjusting screw 118 and interior element 117. For this purpose, spreading element 116 according to FIG. 5 has an axially continuous slot 148, at which spreading element 116 can be opened radially and placed over interior element 117 and adjusting screw 118. In the depicted exemplary embodiment, continuous slot 148 is partially identical with one of slots 143, 144, although it is narrower in the area that extends further.

[0030] In response to the motion of clamping inner tube 111, 111 in outer tube 12, 112 using spreading device 15, 115, interior element 17, 117 is moved away from inner tube 11, 111 in the direction of arrow A by rotating inner tube 11, 111 and therefore adjusting screw 18, 118 to the right (in the case of a left-handed thread) or to the left (in the case of a right-handed thread) with respect to outer tube 12, 112, spreading element 16, 116 first being moved, or pushed, in the same direction up to exterior limit stop 26, 126. Thereafter, in response to a further axial motion of interior element 17, 117, spreading element 16, 116 is spread apart radially in the direction of arrow A, so that the exterior circumference of spreading element 16, 116 under pressure contacts the interior circumference of outer tube 12, 112. In this state, the annular end face of cylindrical shoulder 38, 138 of spreading element 16, 116 has a specific, preestablished, slight distance a from inner limit stop surface 28, 128 of collar 32, 132. Then, inner tube 11, 111 being clamped in

outer tube 12, 112 using a more or less high torque, if an impact-like axial stress is exerted from outer tube 12, 112, which is provided, for example, with a handle, onto inner tube 11, 111, which is provided with a stick tip, then due to the clamping fixation of spreading element 16, 116 in outer tube 12, 112, interior element 17, 117 can move axially. This means that interior element 17, 117 moves further into interior cone 27, 127 of spreading element 16, 116, which leads to a further spreading of spreading element 16, 116 and therefore to an increase in the holding force between interior tube 11, 111 and outer tube 12, 112.

1-7. (canceled)

8. An adjustable-length pole, the pole comprising:

at least one outer tube;

an inner tube structured and dimensioned for insertion into said outer tube in a telescoping fashion for adjusting a length of the pole;

an inner limit stop disposed at an end of said inner tube;

an adjusting screw axially oriented within said outer tube and supported in a rotationally fixed manner on said end of said inner tube;

an exterior limit stop disposed on a free end of said adjusting screw;

a spreading element, said spreading element structured to be radially pressed apart, said spreading element having a bore defining an inner cone, said inner cone opening towards said end of said inner tube, said spreading element disposed between said inner limit stop and said exterior limit stop such that it can move axially within narrow limits; and

an axially moveable interior element having an outer cone structured, dimensioned, and disposed for cooperation with said inner cone of said spreading element, said

interior element having an internal threaded bore cooperating with said adjusting screw, wherein said spreading element and said interior element cooperate to form a spreading device supported at axially said end of said inner tube, said spreading device for clamping said inner tube within said outer tube.

9. The pole of claim 8, wherein the pole is a stick.

10. The adjustable-length pole of claim 8, wherein said spreading element is configured in a pot-like fashion, wherein a pot base is penetrated by a free end area of said adjusting screw, facing away from said inner tube.

11. The adjustable-length pole of claim 8, wherein said spreading element comprises a cylindrical shoulder having a smaller exterior diameter and facing said inner tube, said shoulder being axially guided at one area of said end of said inner tube.

12. The adjustable-length pole of claim 8, wherein said exterior limit stop is formed by a cap that is axially secured at said free end of said adjusting screw after said spreading element has been set in place.

13. The adjustable-length pole of claim 8, wherein said exterior limit stop is formed by a head that is molded onto said free end of said adjusting screw, with said spreading element having a peripheral slot that extends along an entire axial length of said spreading element.

14. The adjustable-length pole of claim 11, wherein said spreading device has a plug that accommodates said adjusting screw in an axial and rotationally fixed manner, said plug being supported axially and in a rotationally fixed manner in said inner tube and defining said inner limit stop, said plug having an axially protruding guide member cooperating with said cylindrical shoulder of said spreading element.

15. The adjustable-length pole of claim 8, wherein said interior element has one or more radially protruding fins, which are guided in axial slots of said spreading element.

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